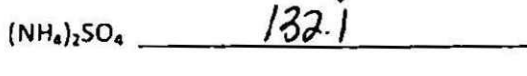
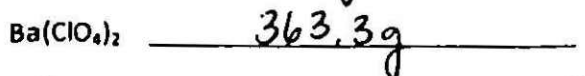
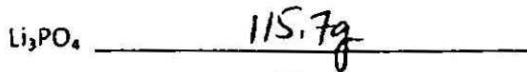
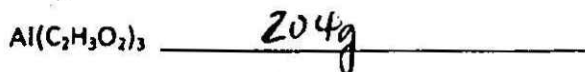


Using the mole map in your chapter 11 Packet, complete the following calculations

Molar Mass. Remember that the molar mass is calculated by summing the products of the number of each atom by their mass (from the periodic table).

Example: Mass of one mole of $\text{Cu}(\text{OH})_2 = 1(\text{Cu}) + 2(\text{O}) + 2(\text{H}) = 1(63.5\text{g}) + 2(16.0\text{g}) + 2(1.0\text{g}) = 97.5\text{g}$



Particle to Mole conversions. ($1\text{mole} = 6.02 \times 10^{23}$)

How many water molecules are there in 14.8 moles of water?

$$14.8 \text{ moles } \text{H}_2\text{O} \left(\frac{6.02 \times 10^{23}}{1 \text{ mole}} \right) = 8.91 \times 10^{24} \text{ molecules } \text{H}_2\text{O}$$

How many moles are represented by 1.4×10^{13} formula units of NaCl?

$$1.4 \times 10^{13} \text{ fu NaCl} \left(\frac{1 \text{ mole}}{6.02 \times 10^{23}} \right) = 2.3 \times 10^{-11} \text{ fu NaCl}$$

Mass to Mole Problems ($1\text{mole} = \text{the molar mass of a substance}$) Hint: you have already calculated some molar masses above that you may use to do these problems.

What is the mass of 2.6 moles of barium ^{per}chlorate? ($\text{Ba}(\text{ClO}_4)_2$ from above)

$$2.6 \text{ mole } \text{Ba}(\text{ClO}_4)_2 \left(\frac{363.3\text{g}}{1 \text{ mole}} \right) = 945 \xrightarrow{2\text{sf}} 950 \text{ g } \text{Ba}(\text{ClO}_4)_2$$

How many moles of ammonium sulfate are in 183g of ammonium sulfate?

$$183 \text{ g } (\text{NH}_4)_2\text{SO}_4 \left(\frac{1 \text{ mole}}{132.1} \right) = 1.39 \text{ moles } (\text{NH}_4)_2\text{SO}_4$$

Volume to Mole Problems ($1\text{mole of a gas at STP} = 22.4\text{L}$)

What is the volume of 0.78 moles of hydrogen gas at STP?

$$0.78 \text{ mol } \text{H}_2 \left(\frac{22.4\text{L}}{1 \text{ mol}} \right) = 17 \text{ L } \text{H}_2$$

How many moles of gas are in 17.6 L of chlorine gas at STP?

$$17.6 \text{ L } \text{Cl}_2 \left(\frac{1 \text{ mol}}{22.4\text{L}} \right) = 0.786 \text{ mol } \text{Cl}_2$$